Chapter 2

Hardware Installation

This chapter gives you a step-by-step procedure on how to install your system. Follow each section accordingly.

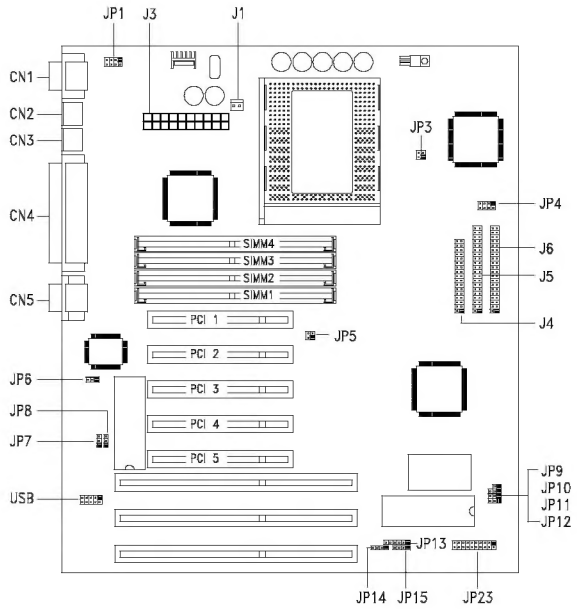
2.1 ESD Precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

2.2 Jumper and Connector Locations

The following figure shows the locations of the jumpers and connectors on the system board:



J1: Two-pin fan connector
J3: ATX power connector
J4: FDD connector
J5: Primary IDE connector
J6: Secondary IDE connector
JP13: IrDA connector
JP14: Software power switch jumper
JP15: HDD LED connector
JP23: Multifunction connector
CN1: COM1 port
CN2: PS/2 mouse connector
CN3: PS/2 keyboard connector
CN4: Parallel port
CN5: COM2 port

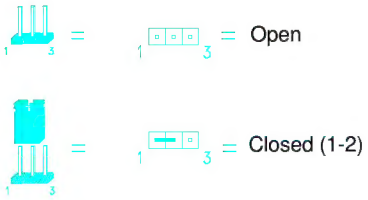
JP3 and JP5: CPU external freq. select jumper
JP4: CPU bus ratio select jumper
JP6: Super I/O controller function jumper
JP7: Keyboard clock jumper
JP8: P/2 mouse function jumper
JP9: Reserved jumper
JP10: CMOSjumper
JP11 and JP12: Intel Flash ROM programming jumper

2.3 Setting the Jumper

Set a jumper switch as follows:

- To open a jumper, remove the jumper cap.
- To close a jumper, insert the plastic jumper cap over two pins of a jumper.

The conventions in the figure are used to represent the proper jumper settings.



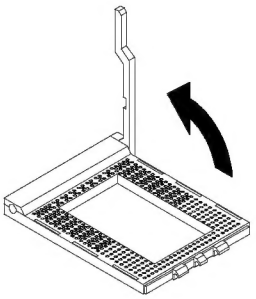
2.4 Installing a Microprocessor

The motherboard comes with a ZIF microprocessor socket that allows you to install a CPU without using any tool.

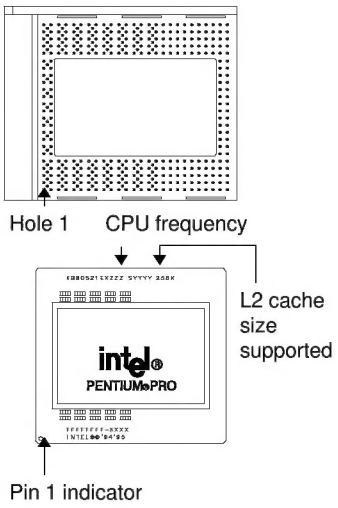
Follow these steps to install a CPU into a ZIF-type CPU socket:

Make sure that the system power is OFF before installing a component.

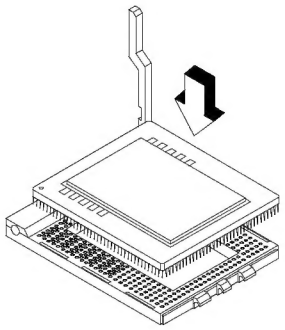
1. Locate the CPU socket on the system board and pull up the socket lever.



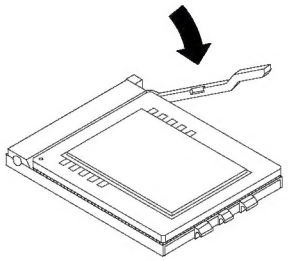
2. Align pin 1 of the CPU with hole 1 of the socket. The dot on the CPU indicates pin 1. The topmost label indicates the CPU frequency and the cache size.



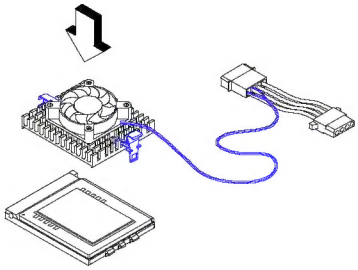
3. Gently insert the CPU into the socket.



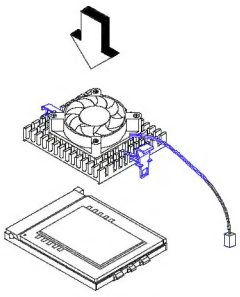
4. Pull down the socket lever to lock the CPU into the socket.



5. Attach the heatsink and fan to the CPU.

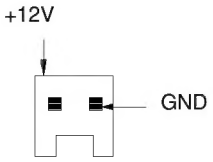


With four-pin fan connector



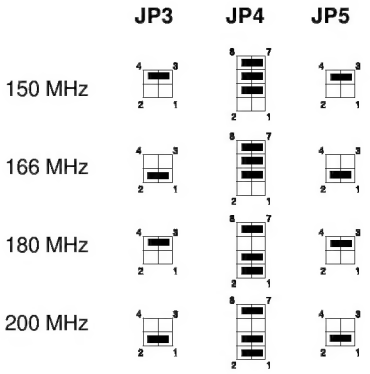
With two-pin fan connector

6. Plug in the fan cable to the two-pin fan connector onboard. The fan connector is marked **J1** on the system board. If your fan cable has four pins, plug it into the connector on the power supply unit.



7. Set jumpers **JP3, JP4** and **JP5** according to the frequency supported by the CPU currently installed on your board.

CPU FREQUENCY SELECT



2.5 Upgrading the Microprocessor

To upgrade a CPU:

1. Turn off the system power and remove the housing cover.
2. Locate the CPU socket on the system board.
3. Pull up the socket lever.
4. Remove the installed CPU, if any.
5. Install the upgrade CPU. Refer to section 2.4 for instructions on how to install a CPU.

2.6 Configuring the System Memory

The system memory is expandable to 512 MB by adding single in-line memory modules (SIMMs). The four 72-pin SIMM sockets accommodate 4-, 16- and 64-MB single-density SIMMs, and 8- and 32-MB double-density SIMMs. These SIMM sockets also accept both FPM and EDO type DRAMs, with or without parity. The EDO feature extends the data transfer cycle, thus improves memory performance. All SIMMs support a DRAM speed of 60/70 ns or less.

The SIMMs with parity supports the ECC (Error Checking and Correction) feature that enables the system to detect and correct data errors. To fully support this function, you must install 36-bit parity-type SIMMs (i.e., 8 chips plus 4 parity chips) in pairs in all banks. The combination of 32-bit non-parity (i.e., 8 chips) and 36-bit parity-type (i.e., 12 chips) memory configuration is also possible; however, this does not allow you to make use of the ECC function.

The following are the possible SIMM configurations. Notice that you must install the same SIMMs in one bank.

Memory Configurations

Bank 0		Bank 1		Total
SIMM 1	**SIMM 2**	**SIMM 3**	**SIMM 4**	**Memory**
4 MB	4 MB			8 MB
4 MB	4 MB	4 MB	4 MB	16 MB
8 MB	8 MB			16 MB
8 MB	8 MB	4 MB	4 MB	24 MB
8 MB	8 MB	8 MB	8 MB	32 MB
16 MB	16 MB			32 MB

Memory Configurations (continued)

Bank 0		Bank 1		Total
SIMM 1	SIMM 2	SIMM 3	SIMM 4	Memory
4 MB	4 MB	16 MB	16 MB	40 MB
8 MB	8 MB	16 MB	16 MB	48 MB
16 MB	16 MB	16 MB	16 MB	64 MB
32 MB	32 MB			64 MB
4 MB	4 MB	32 MB	32 MB	72 MB
8 MB	8 MB	32 MB	32 MB	80 MB
16 MB	16 MB	32 MB	32 MB	96 MB
32 MB	32 MB	32 MB	32 MB	128 MB
64 MB	64 MB			128 MB
4 MB	4 MB	64 MB	64 MB	136 MB
8 MB	8 MB	64 MB	64 MB	144 MB
16 MB	16 MB	64 MB	64 MB	160 MB
32 MB	32 MB	64 MB	64 MB	192 MB
64 MB	64 MB	64 MB	64 MB	256 MB
128 MB	128 MB			256 MB
4 MB	4 MB	128 MB	128 MB	264 MB
8 MB	8 MB	128 MB	128 MB	272 MB
16 MB	16 MB	128 MB	128 MB	288 MB
32 MB	32 MB	128 MB	128 MB	320 MB
64 MB	64 MB	128 MB	128 MB	384 MB
128 MB	128 MB	128 MB	128 MB	512 MB

Make sure that you install the same SIMM type for each bank.

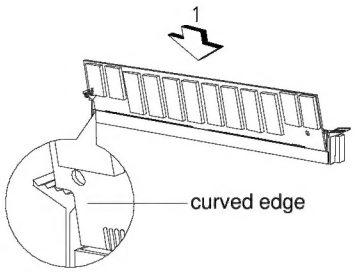
Do not install memory modules that contain more than 24 chips. These modules exceed the ASIC specification. Doing so may result in unstable system performance.

2.6.1 Installing a SIMM

Observe the ESD precautions when installing components.

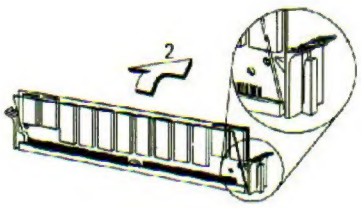
Follow these steps to install a SIMM:

1. Slip a SIMM at a 45 ° angle into a socket. If the SIMM does not completely fit into the socket, reverse the SIMM orientation. The SIMM has a curved edge indicating pin 1 that ensures installation in one direction only.



Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).

2. Gently push the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into a vertical position.

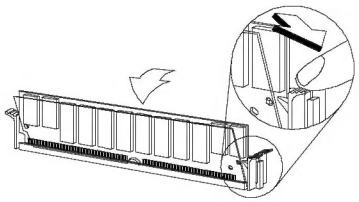


The SIMM should be at a 90 angle when installed.

2.6.2 Removing a SIMM

To remove a SIMM:

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Press the SIMM downward to about a 45° angle.
3. Gently pull the SIMM out of the socket.



2.7 Customizing your Hardware Setup

You may customize your hardware setup according to your desired system performance. However, doing so requires resetting of several jumpers. The onboard jumpers are normally set to its default setting. See the figure in section 2.2 for the location of the jumpers on the system board.

The following sections tell how to configure the system board to meet the desired performance:

2.7.1 Setting the Voltage Regulator

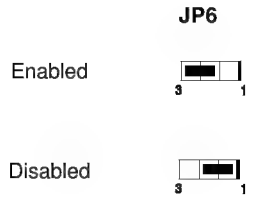
The jumper **JP1** enables you to set the voltage of the onboard voltage regulator. The supported voltage range is from 2.1V to 3.5V. See the following figure for the correct settings. *

Voltage	JP1	Voltage	JP1
Auto *		2.8V	
3.5V		2.7V	
3.4V		2.6V	
3.3V		2.5V	
3.2V		2.4V	
3.1V		2.3V	
3.0V		2.2V	
2.9V		2.1V	

* The system can automatically detect the CPU volltage through the VID pins; therefore, by default, **JP1** is set to OPEN. You do not need to set the voltage regulator setting.

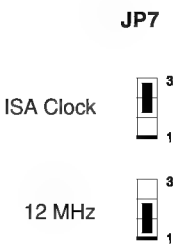
2.7.2 Disabling the Onboard Super I/O Controller

The board is preset by the manufacturer with the onboard I/O controller enabled. In case you wish to use an external I/O controller, you need to disable the onboard I/O before the external I/O card functions. To disable, you need to reset jumper **JP6** to 1-2.



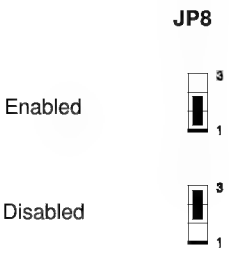
2.7.3 Setting the Keyboard Clock

By default, the keyboard clock is set according to the ISA clock. If you want to increase the clock setting to 12 MHz by simply resetting jumper **JP7** to 1-2.



2.7.4 Disabling the PS/2 Mouse Function

The PS/2 mouse function is normally enabled and occupies IRQ12. To reassign IRQ12 to another function, you need to disable the PS/2 mouse function by setting jumper **JP8** 2-3 and changing the BIOS setting (see Chapter 3).



2.7.5 Enabling the Intel Flash ROM Boot Block Programming

The Intel Flash ROM has two areas that can be programmed separately: the 8KB boot block and the 120KB main BIOS area.

The jumpers **JP11** and **JP12** allow you to program the Flash ROM boot block. By default, the boot block program function is enabled and both JP11 and JP12 are set to 1-2.

	JP11	JP12
Enabled (default)		
Reserved		

The jumper setting shown above applies only for Intel Flash ROM.

Do not change the default setting of JP11 and JP12. Doing so modifies the main BIOS area but not the boot block, causing the BIOS to become inconsistent. This may result in serious system damage.

2.7.6 Selecting the Power Switch Type

The jumper **JP14** allows you to set the power switch type that you want to support, i.e., either the toggle type or the momentary type. However, before you set this jumper, make sure that you know your power switch type.

	JP14
Toggle type switch	
Momentary type switch	

To differentiate a toggle type from a momentary type, check the On and Off switch position. In a toggle type switch, a pressed switch indicates On position while a normal switch position indicates Off. In a momentary type, the switch position does not change for both modes.

To support a toggle type switch, close pins 2-3 of JP14. Close all pins (1-4) to support a momentary type switch.

2.7.7 Clearing the CMOS

You need to clear the CMOS if you forget your system password. To clear the CMOS, do the following steps:

Before you proceed, check your onboard CMOS chip. The "clearing" procedures vary depending on the CMOS chip type. Read the CMOS chip label to determine the chip type.

For Dallas DS12887A:

1. Turn off the system power.
2. Locate **JP10** and short pins 1-2 for a few seconds. Check your manual for the correct jumper settings and location of the jumpers.
3. Reset JP10 to its normal setting by shorting pins 2-3.
4. Turn on the system power.
5. Press DEL during bootup to enter the BIOS Setup Utility and specify a new password, if needed.

JP10

Normal (default)

Clear CMOS

For Dallas DS12B887, BENCHMARQ bq3287AMT, or SGS ST M48T86 PCI chip:

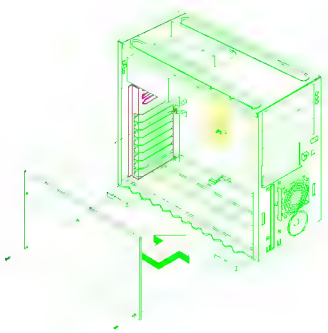
1. Turn off the system power.
2. Locate **JP10** and short pins 1-2 for a few seconds. Check your manual for the correct jumper settings and location of the jumpers.
3. Turn on the system power.
4. Turn off the system power again.
5. Reset JP10 to its normal setting by shorting pins 2-3.
6. Turn on the system power .
7. Press DEL during bootup to enter the BIOS Setup Utility and specify a new password, if needed.

2.8 Installing the System Board

Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.

Follow these steps to install a system board into a housing:

1. Open the system housing. Refer to the housing documentation for steps on how to remove the housing cover.
2. Install the board into the housing and secure it with the screws that come with the housing.
3. Attach the cables and install the necessary peripherals. See the following section for information on how to connect the peripherals.

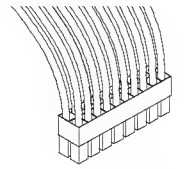


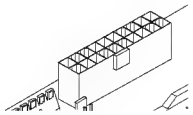
Refer to your housing documentation for more information on the system housing.

2.9 Connecting Peripherals

2.9.1 Power Cable

The board comes with an ATX type power connector. This connector has a "fool-proof" design that allows you to connect the ATX power cable in one direction only.





If you cannot insert the cable into the connector, reverse the cable orientation. Do not force to insert the cable.

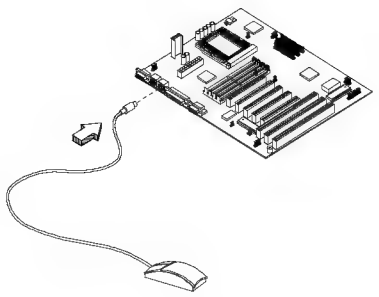
The power connector is marked **J3** on the system board.

Make sure that the power supply is off before connecting or disconnecting the power cable.

2.9.2 Mouse

PS/2 Mouse

To connect a PS/2 mouse, simply plug in the PS/2 mouse cable connector to **CN2** on the system board.

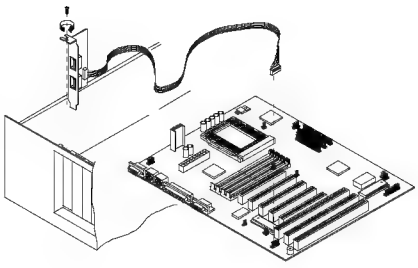


Serial Mouse

To connect a serial mouse, plug in the mouse cable connector to **CN1** (COM1) or **CN5** (COM2). See section 2.9.4.

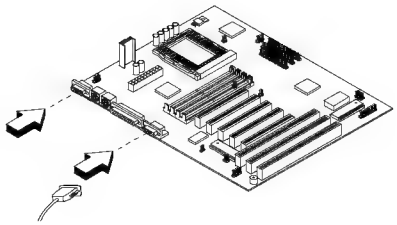
2.9.3 USB Devices

You need a USB bracket to enable your system to support USB device(s). To attach a USB bracket, simply insert the bracket connector to the onboard USB connector. See section 2.2 for the location of the USB connector.



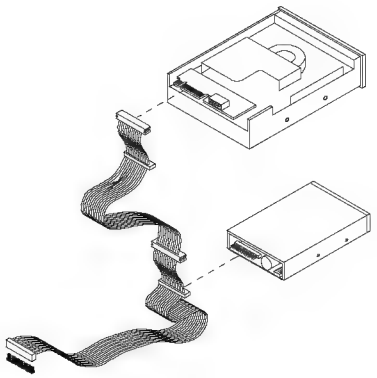
2.9.4 Serial Devices (COM1/COM2)

To support serial devices, insert the serial device connectors to the appropriate COM ports marked **CN1** (COM1) and **CN5** (COM2) on the system board.



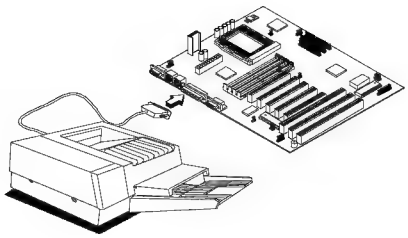
2.9.5 Floppy Disk Drives

Connect the drive cable to the floppy disk drive connector marked **J4** on the system board. See section 2.2 for the location of the connector. Refer to the figure on how to connect the cables.



2.9.6 Printer

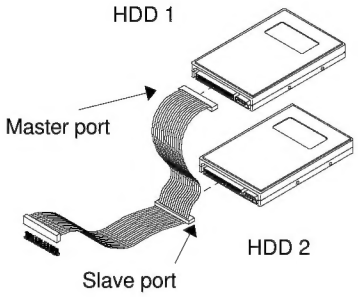
Plug in the printer cable to the onboard parallel connector marked **CN4**. Refer to the figure.



2.9.7 IDE Devices

Primary IDE Connector

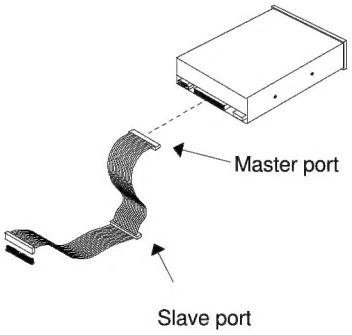
The primary IDE connector marked **J5** on the system board supports two IDE devices - one IDE hard disk and one additional IDE device. Connect your IDE HDD to the master port of the primary IDE cable. If you have other IDE device to install in your system, connect it to the slave port.



Secondary IDE Connector

The secondary IDE connector is marked **J6** on the board. This connector also supports two IDE devices. To install an IDE CD-ROM drive into your system, insert master port of the secondary IDE cable into the CD-ROM drive connector.

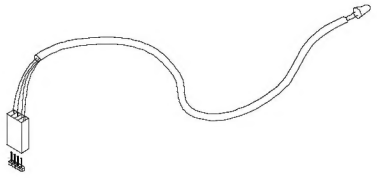
If you have more than two hard disks, connect your third hard disk to the master port of the cable. Then, connect your CD-ROM drive to the slave port.



2.9.8 Front-panel Switches and LEDs

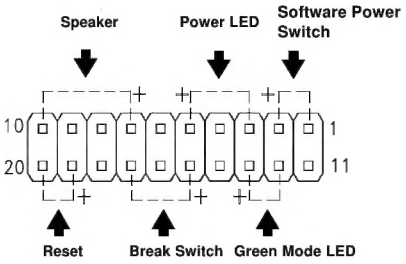
HDD LED

The HDD LED connector is marked **JP15** on the board. Plug in the HDD LED cable to this four-pin connector. See the figure.



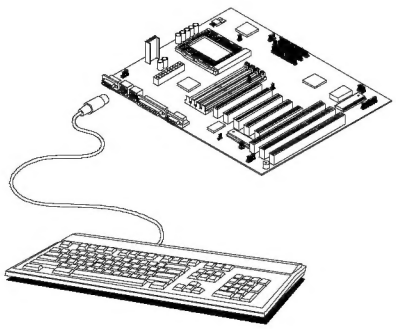
Multifunction Connector

The multifunction connector is a 20-pin connector marked **JP23** on the board. Attach the green mode LED, software power switch, reset switch, break switch, and speaker connectors to its corresponding pins on the connector as shown in the figure.



2.9.9 Keyboard

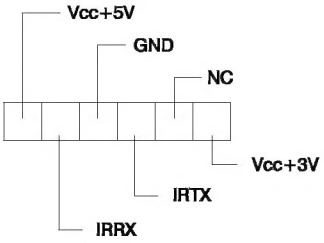
To connect a PS/2 keyboard, plug in the PS/2 keyboard cable to the PS/2 keyboard connector marked **CN3** on the system board.



2.9.10 IrDA Module

The connector marked **JP13** allows you to install an Infrared (IrDA) module. The IrDA module enables the system to transfer data and communicate with portable devices such as laptops, PDA, and printers, without the need to connect cables. This remote (or wireless) communication function complies with the IrDA specification, i.e, 115 Kbs maximum data transfer rate at a distance of up to one meter. The ASK-IR feature is also supported.

When installing an IrDA module, take note of the pin configuration of JP13 to ensure proper connection.



2.10 Installing Expansion Boards

Before you install any expansion board, make sure that you have secured the system board in the housing.

Follow these steps to install an expansion board:

1. Observe the ESD precautions before removing the expansion board from its protective packaging.
2. Locate an empty expansion slot on the system board.
3. Remove the bracket opposi te the slot that you want to use. Save the cover and screw for future use.
4. Remove the board from its protective packaging.
5. Gently insert the golden edge of the board onto the slot until it fits into place.
6. Secure the bracket to the housing with a screw.